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Cover Page Footnote
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Perceptions of Medicinal Plant Use Amongst the Hispanic Population in the St. Louis Metropolitan Area

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Abstract

Introduction: *Medicinal plant use in the United States has increased as reported by the National Center of Complementary and Integrative Health and U.S. Census Bureau. However, little is known about how many minority groups in the United States use medicinal plants. There is a rise in the Hispanic population; a community with a steep tradition of medicinal plant use, in the U.S., so understanding the perceptions of medicinal plant use is useful to healthcare providers.*

Methods: *A survey was designed to gauge a better understanding of the perceptions of medicinal plant use amongst Latino patients with varying education levels who reside in the St. Louis Metropolitan Area. Survey questions highlighted the perceptions of medicinal plants use, patient communication regarding medicinal plant use with healthcare providers (pharmacists and doctors), and the impact the education level has on medicinal plant use.*

Results: *Surveys were distributed to six different investigational sites around the St. Louis Metropolitan Area from August 2015 to December 2015. Survey respondents identified 45 different plants/herbs that they currently use or had used at some point in their life. Those with higher levels of education had varying opinions on medicinal plant use with their current practices.*

Conclusion: *The participants' high interest in the use of medicinal plants exemplifies the need for enhanced communication between patients and healthcare professionals about medicinal plant use. However, it was hard to determine whether the participants' level of education had any direct relationship to this use.*

Keywords: *Medicinal plants, herbal medicines, Hispanics, Midwestern U.S., pharmacists*

Introduction

The use of medicinal plants is as old as human kind, with the earliest reports being from the Mesopotamia (2600 BC).[1] Medicinal plants, also known as herbal medicine, have been defined by the World Health Organization in the following way: "medicinal plants include herbs, herbal materials, herbal preparations and finished herbal products that contain as active ingredients parts of plants, or other plant materials, or combinations."[2] Wachtel-Galor and Benzie[3] found that the most common reasons for the use of medicinal plants are as follows:

- more affordable
- more closely corresponds to the patient's ideology
- allays concerns about the adverse effects of chemical (synthetic) medicines
- satisfies a desire for more personalized health care
- allows greater public access to health information

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Many people in developing countries rely on medicinal plants for their primary care and they are thought to be used "for health promotion and therapy for chronic conditions not life-threatening conditions."[3]

Medicinal plants are seen as natural and, therefore, as safe. However, since there is little standardization in medicinal plants production, the effects can vary between batches that are produced.[3] Saper et al.[4] highlighted concerns of herbal contamination, herbal adulteration, and misidentification of herbal product.[4] Within the United States, any herb is classified as a dietary supplement under the Dietary Supplement Health and Education Act (DSHEA) and these products do not need approval from the Food and Drug Administration before they are marketed. Medicinal plants are presumed safe under DHSEA and manufacturers are responsible for determining if they are safe and information about their use is not false or misleading.[5]

Medicinal plants are commonly used today despite the development of man-made drugs. The National Center of Complementary and Integrative Health (NCCIH) and the National Center for Health Statistics (NCHS) reported that the use of complementary and alternative medicine (CAM) has been on the rise in the United States.[6] CAM is a group of

diverse disciplines that are not commonly adopted by conventional medicine (Western medicine).[7] Complementary medicine is used together with conventional medicine (such as aromatherapy) and alternative medicine is used in place of conventional medicine (such as special diets replacing surgery).[7,8]

It is estimated that approximately 20% of the population of the U.S. use medicinal plants on a regular basis.[9–11] In a 2007 National Health and Interview Survey (NHIS) conducted by the U.S. Census Bureau, people with American Indian/Alaska Native background had the highest use of CAM (50.3%) while Hispanics had the lowest (23.7%).[6] However, in a systemic review conducted by Gardiner et al. in 2013, they noted that "smaller and regional studies have reported higher herb use rates among Hispanics, African Americans and Asians with rates as high as 46% among Hispanic people."[9] Another meta-analysis reported 4 to 100%, with an average of 30% of U.S. Latinos, regularly using medicinal plants.[9,10]

As of July 1, 2013 the Hispanic population accounted for 17% of the U.S. population according to the U.S Census Bureau statistics. It is predicted that this population will continue to grow and will constitute 28% of the U.S. population by 2050.[12] In accordance with this, the Hispanic population in the St. Louis Metropolitan Area, a region that includes counties in southwestern Illinois, is growing rapidly. As reported by the Illinois Latino Family Commission, the Latino population increased by 89.2% and 54.4% from 2000 to 2010 in Senate Districts 56 and 57 respectively, which are located in this area.[13] With this increase in population, understanding perceptions of medicinal plant use with the Hispanic population is needed since not enough is known about Latino medicinal plants use in the Midwest[10] and since significant regional variation in prevalence data exists, more regional surveys are needed to more accurately understand the use of medicinal plants and the health beliefs of this ethnic population.

Health beliefs and the practice of medicine in Latin America is a combination of three distinctive civilizations: 1) the diverse indigenous American healing systems of the Incas, Mayans, Aztecs, and other minor tribes; 2) the African Americans brought to the continent as slaves that adapted and reinvented their practices; and 3) the large number of European colonizers in the 17th and 18th centuries.[14] Latin Americans are not culturally unified as many countries have been influenced differently based on their heritage and overall changing populations. Countries with strong indigenous roots include ones such as Mexico, Peru, Guatemala and Bolivia, whereas Venezuela, Brazil and the Caribbean countries have a strong African American influence. Even within those countries there is a great diversity in their perception on different medicine systems.[15]

According to Ortiz et al. the use of CAM within the Hispanic population is attributed to a mixture of cultures with health being dependent on the proper distribution of the body's 4 humors: blood, phlegm, yellow bile, and black bile. These are classified by physical properties such as hot, cold, moist (wet) or dry. It is believed that illness is attributed to the imbalance of the humors and treatment is used to restore the balance. CAM practices are a part of Hispanic cultural roots and integrated part of their lives.[16]

The purpose of this study is to have a better understanding about the 1) perceptions of medicinal plants use within the Hispanic population, 2) communication concerning medicinal plant use with healthcare providers (pharmacists and physicians), and 3) level of education and the potential impact on medicinal plant use. For the purpose of this study we have defined Hispanics as those of Mexican, Puerto Rican, Cuban, Dominican, Central and South American, or other Spanish culture of origin regardless of race.

Methods

Survey questions were developed with the following as inclusion criteria:

- Resident or employee in the St. Louis Metropolitan Area with a Hispanic background.
- 18 years of age to 75 years of age with any level of education.

Content of the survey

The first section consisted of background demographic information that included approximate age, gender, level of education, length of residency in the U.S., occupation, and country of origin. The next section included eleven specific questions related to medicinal plant use. The first four questions dealt with the history of the respondent's use of medicinal plants, which specific plants are/were used, where they are obtained, and the disease state associated with the medicinal plant. Questions five through seven were related to whether medicinal plants were used in conjunction with man-made drugs, if the medicinal plants were the same as those in their country of origin, and where they obtain information about the plants. The next three questions (eight through ten) addressed if information was obtained from the patients' healthcare providers and whether their medicinal plant use was shared with physicians or pharmacists. Finally, those participants with a healthcare background or post-graduate degree were asked an additional question about their perceptions of medicinal plant use and if their additional education influenced the use.

The survey was submitted to the Southern Illinois University Edwardsville (SIUE) Institutional Review Board for approval. After approval, English and Spanish versions of the survey

were distributed to each investigation site. The time frame for data collection was August 2015 to December 2015. Hard copies of the survey were distributed by the investigators to 3 local pharmacies and 2 local churches. These sites were chosen due to a high Hispanic population in the St. Louis Metropolitan area. A flyer (Appendix A) was also distributed with the hard copy surveys to recruit volunteers to complete the survey. The pharmacists at the local pharmacies also asked participants to complete the survey and a member of the church announced for participation at the beginning of mass. A box labeled SIUE Surveys was left at each investigational site and the surveys collected at the end of each month. In addition, an electronic version of the survey was developed through Qualtrix and distributed via email with the anonymous link to the survey to faculty who currently teach at Southern Illinois University Edwardsville (SIUE), SIUE School of Pharmacy students, and Hispanic community members. The anticipated time to complete the entire survey was 10-15 minutes.

Results

A total of 70 surveys were obtained but 12 surveys were not included in the data analysis as they were incomplete (9) or were non-Hispanic participants (3). The responses in Spanish were translated by one of the investigators of this study (MN). More than half (63.8%) of the survey participants were female and 53.4% were 31-50 years-old. (**Figure 1**) Housewives represented 17.2% of the participants, followed closely by Education/Professionals at 22%. The level of education varied with roughly half of the participants having at least a bachelors or a post-graduate degree (**Figure 1**). While the majority (81%) have been U.S. residents over ten years (**Figure 1**), the country of origin that represented almost half of the survey participants was Mexico (**Figure 2**).

Figure 1. Demographics.

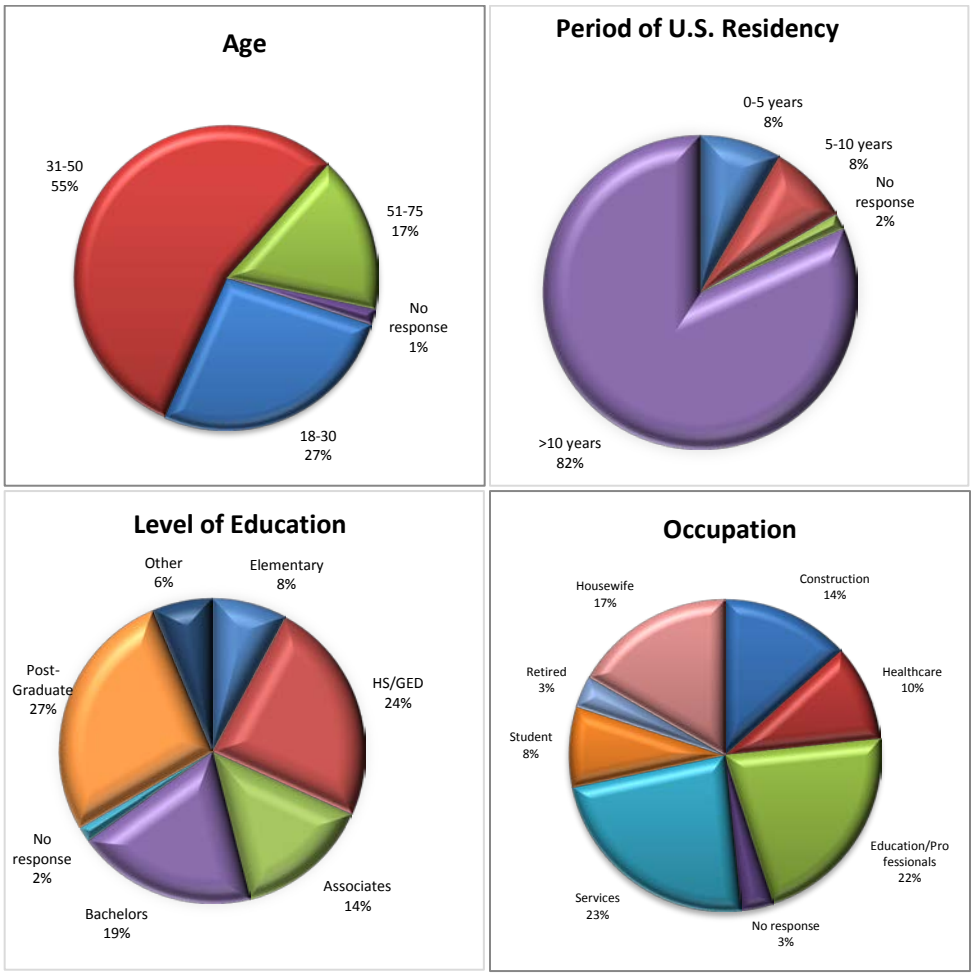
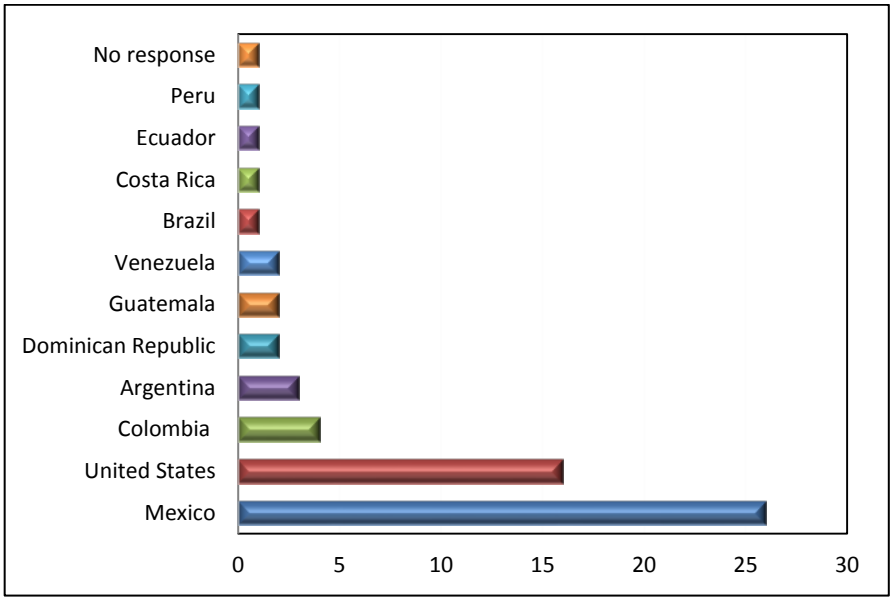
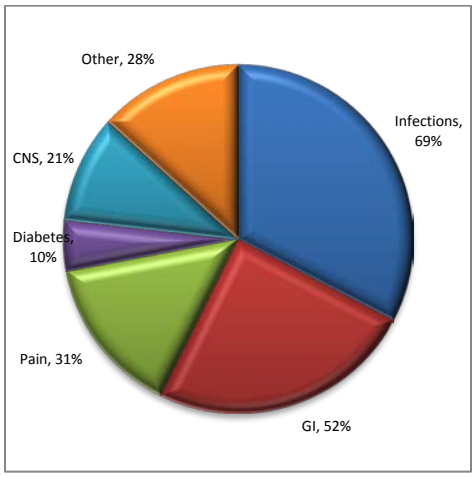


Figure 2. Country of origin.



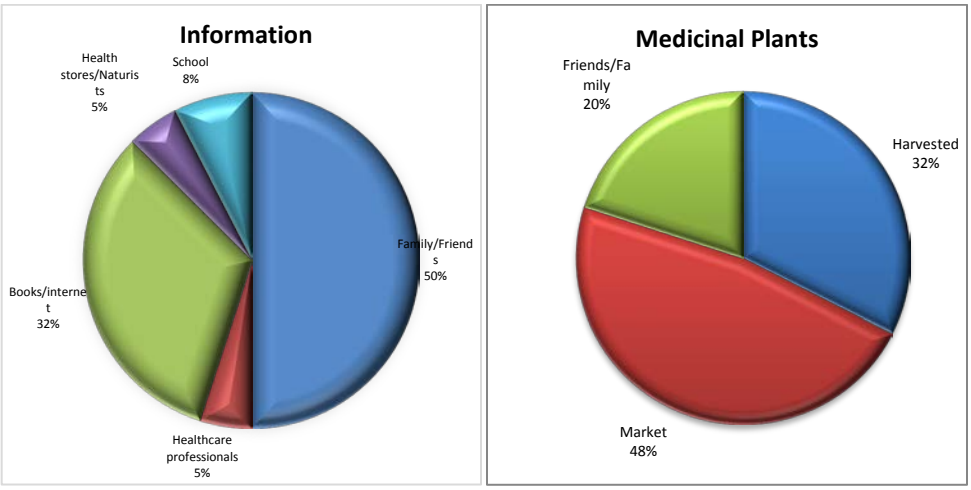
Over half of the survey participants (55%) have used medicinal plants. However, approximately 12% of those are currently using medicinal plants. Forty-five different plants/herbs were identified with chamomile, aloe, and spearmint being the top three (**Table 1**). Infections, predominately respiratory infections, were the most common disease state for which medicinal plants were being used (**Figure 3**). Family/friends was the top resource for obtaining information about medicinal plants (**Figure 4**). The market/store and gardens were the top two places respondents obtain medicinal plants (**Figure 4**). More than half of respondents use both medicinal plants and man-made medicine.

Figure 3. Diseases treated with medicinal plants as reported by participants.*



* Infections include: flu, sore throat, cough, common cold, wound healing, fever, and infections; Pain includes: menstrual, bone and muscle pain, headache, and other aches; GI includes: diarrhea, bile, liver, intestine, and colon issues; CNS include: stress, relaxant, nerves, insomnia, and sedative; Other includes: eyes, sunburn, and hair.

Figure 4. Source of information and medicinal plants reported by participants.



More respondents (90.6%) believed that patients should inform their physicians about medicinal plant use than their pharmacists (68.8%). Many stated the reasoning for such communication is to know if there are any contraindications or interactions with the medicinal plants that patients may be using. Some of the reasons respondents do not inform their healthcare providers included comments such as "They don't believe in the natural 'stuff'…" or "We believe they (medicinal plants) do not have secondary effects like the medicines" Responses with those who have higher levels of education varied. There were a few who stated that they believed medicinal plant use was better than man-made medicine. A couple of respondents stated that they would research or learn more about medicinal plants.

Discussion

First-generation Hispanics and new immigrants are more likely to hold traditional beliefs which include CAM.[16] Eighty-one percent of our survey respondents stated that they have been a resident of the U.S. for 10 years or more and 24.1% of respondents stated that their country of origin is the United States (**Figure 1**). Due to the high number of respondents with a long U.S. residency, this could explain why only 12% stated they are currently using medicinal plants. We hypothesize that medicinal plant use may decrease in those who live a longer period of time away from their country of origin as they are less likely to be exposed to its use.

While the majority of the respondents using medicinal plants agree on informing the doctor (90.6%) or pharmacists (68%) about their use, only about half of them (56.3%) seek information from healthcare providers about medicinal plants. This may be due to patients feeling that healthcare providers do not know as much about medicinal plants as other resources or reticence because of cultural and language differences between the healthcare provider and patient. It could also be due to fear of being ridiculed by healthcare providers for using complementary healing practices. Interestingly, most of the respondents that agree on informing healthcare providers do so due to issues concerning interactions with man-made medicines, on the other hand the few (10%) that do not do so because of their perception of healthcare providers "not believing in the natural stuff". More respondents believed medicinal plant use should be communicated to physicians than to the pharmacist, with one respondent comment "because you already told your doctor". Because of this, healthcare providers, particularly pharmacists, need to be aware and inquire about medicinal plant use with every patient who is using them.

The use of anonymous surveys may have enhanced participation rather than the utilization of individual interviews or focus groups. Gomez-Beloz and Chavez[17] cited that the reluctance to report medicinal plant use by Latinos is well known so respondents of our surveys may have felt freer to communicate their perceptions in an anonymous survey. This study may have had higher number of participants by distributing surveys that could be taken in Spanish to prevent potential language barriers. This was evidenced by Gardiner et al.[9] who found that bilingual studies may allow participants to explain more about their herb use if English is not their primary language.[9] In our study, over half of the respondents (58%) completed the survey in Spanish. Gardiner et al.[9] also reported more than half of those surveyed used herbs for treatments with the majority of Hispanic respondents being female which was in accordance with our findings.[9] Mikhail et al.[18] also reported the majority (75.4%) of respondents as

female. However, consistent with these studies, we did not find any significant differences in the responses based on gender. Ortiz et al.[16] found that women were primarily responsible for the health and well-being in traditional Hispanic families. This may be a contributing factor to the higher female participation in Gardiner et al. [9], Mikhail et al.[18], and our study. It was also reported by Ortiz et al. [16] that illnesses are managed at the discretion of the caregiver (usually mother) if treatment is managed outside of formal healthcare or require "professional" help.

From the 31 respondents reporting the use of medicinal plants, about 83% provided examples of the plants used. The top four plants reported were chamomile, aloe, eucalyptus, and spearmint (**Table 1**). In their pilot study of a Midwest Latino population in Madison, Wisconsin, Kiefer et al.[10] reported the same top four plants being used by the participants of their study. Our participants reported 45 medicinal plants used, Kiefer et al.[10] reported a total of 57 plants. Although there was a high percentage of plant overlap between both studies, variances could be due to regional and cultural differences in names of species of plants.

Table 1. Most commonly mentioned plants by participants.

Common names		Scientific name	%
English	Spanish		
Chamomile	Manzanilla	*Matricaria recutita*	49
Aloe	Sábila/Aloe	*Aloe vera var.*	35
Spearmint	Hierba Buena	*Mentha spicata*	26
Eucalyptus	Eucalypto	*Eucalyotus obliquo*	23
Mint	Menta	*Mentha piperita*	23
Ginger	Jenjibre	*Zingiber officinale*	13
Rosemary	Romero	*Rosmarinus officinalis L.*	13
Rue	Ruda	*Rutaceae Juss.*	13
Garlic	Ajo	*Allium sativum L.*	10
Arnica	Arnica	*Caccharis trinervi*	10
Oregano	Orégano	*Organum vulgare L.*	10
Lemon verbena	Cedrón	*Aloysia Citriodora*	10
Thyme	Tomillo	*Thymus vulgaris*	10
Basil	Albahaca	*Ocimum basilicum L.*	6
Horsetail	Cola de Caballo	*Equisetum arvense*	6
Echinacea	Echinacea	*Echinacea purpurea*	6
Lemon	Limón	*Citrus limon*	6
Linden	Tilo	*Tilia platyphyllos*	6

* The following medicinal plants were mentioned once by participants: anís (anise), calabaza amarga (bitter gourd), canela (cinnamon), cebada (barley), diente de leon (dandelion), gordolobo (mullein flowers), jazmín (jasmine), plátano (plantain), lavanda (lavender), limoncillo (Spanish lime), linaza (flaxseed), coca, muña, nopal (prickly pear), Nurhiten, aguacate (avocado), Pancho Diaz or Hierba de Ahito, pericon (Mexican tarragon), pimiento (pepper), pionius (peonias), pasiflora (passion flower), salvia, sangre de Drago (dragon's blood), manzana (apple), uña de gato (cat's claw), valeriana (valerian).

Kiefer et al.[10] reported family members as the most common source of information about medicinal plants, which is in accordance with our findings (**Figure 4**). The diseases most commonly treated with medicinal plants as reported by our participants (**Figure 3**) were infections (predominantly respiratory) and gastrointestinal disorders, which is in accordance with Trangmar and Diaz[19] and Kiefer et al.[10] However, both of those studies also reported cardiovascular issues as top diseases treated with medicinal plants, which was not the case for our participants. Pain was commonly reported by participants as a health condition treated with medicinal plants in Barnes et al.[11] and Kiefer et al.[10] as also revealed in our study (**Figure 3**).

A limitation to this study was that some questions were not fully answered by participants. Another limitation was that the additional questions for those with higher levels of education or healthcare backgrounds didn't result in information that would allow us to draw strong conclusions. From the respondents with higher level of education (27%), roughly half of them reported having been influenced by their education on the use of medicinal plants. Interestingly, all of the comments were proactive about the use of medicinal

plants and communication with health care providers. Comments such as “I know what is safe to use”, “I now know there are such interactions”, and “Knowledge of active components of plants could solve many issues” were a common theme. But a larger participant pool may have helped us draw more definitive conclusions about this and other aspects of this study.

Communication between healthcare providers and patients is important because of potential interactions or contraindications with man-made drugs. For example, chamomile can interact (purportedly) with patients taking anticoagulants (such as warfarin), enhancing the anticoagulant effect leading to increased risk of bleeding.[20] Another example is aloe when taken with antidiabetic agents, can lead to increased risk of hypoglycemia.[21] Many patients have multiple disease states that need to be managed with numerous medications which can pose a problem with interactions between man-made drugs and medicinal plants. Because of this and the general lack of medicinal plant use disclosure to providers among some minority populations, serious health risks to the patient can exist. Efforts should be made to improve this disclosure which could enhance patient-provider communication across racial/ethnic groups.

Conclusion

Due to the growing number of consumers using medicinal plants, it is very important for more communication between healthcare providers and their patients, especially communication with pharmacists. It is also important that healthcare providers always inquire about herbal use as this research showed the variety of medicinal plants that participants have used or are currently using. Higher levels of education may play a role in medicinal plant use; however this relationship wasn’t determined through our study. The varying results from this study and other literature cited indicates a need for more research on medicinal plants use within different ethnicities, reasons for its use, and barriers to communication between patients and healthcare providers. Additionally, more education should be available for the general public and healthcare professionals about medicinal plants and their use.

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Appendix A

VOLUNTEERS NEEDED PLEASE!

Who: Participants 18 to 75 years-old with a Hispanic background.
What: 10-15 minute survey participation. Responses are anonymous.
Why: The Southern Illinois University Edwardsville School of Pharmacy would like to learn more about the use and impact of medicinal plants among the Hispanic community and how Pharmacists can be of assistance.
Where: Surveys located in waiting area table. Box provided to return responses.

Thank you!